Funciones II

REPASO UNI - 2021

1. Sea la función $f_{(x)}=\dfrac{\sqrt{x}-1}{\sqrt{x}-2}; x\geq 9$

tal que $f^{-1}{}_{(x)}=\left(\dfrac{mx-1}{nx-1}\right)^2$; Dom$f^{-1}=\langle a;b]$

determine $N=m+n-a-b$.

A) 4 B) 3 C) 2
D) 1 E) 0

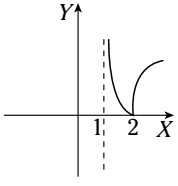
2. Sea la función exponencial

$f_{(x)}=|2^{1-|x|}-3|$; tal que $x\geq 2$
cuyo Ran$f=[\alpha;\beta\rangle$. Determine $N=\beta+2\alpha$.

A) 4 B) 6 C) 7
D) 8 E) 5

3. Determine la gráfica de la función
$y=|\log(|x|-1)|$

A)



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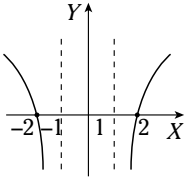

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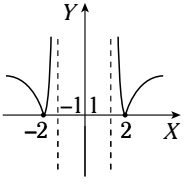

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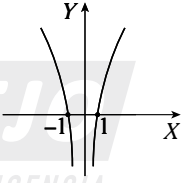

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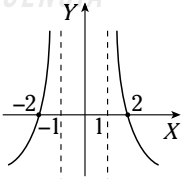

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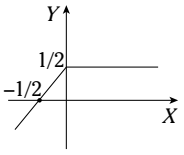
4. Determine la gráfica de la relación siguiente.
$R=\{(x;y)\in\mathbb{R}^2/||x|-x|=|2y-1|\}$

A)


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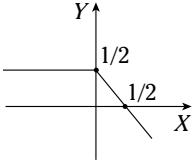

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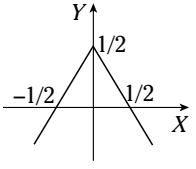

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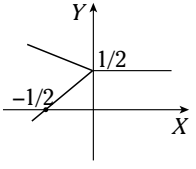

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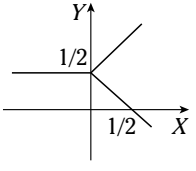
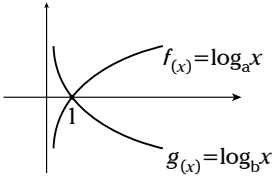


5. Dado el gráfico



indique la secuencia correcta de verdad (V) o falsedad (F).

I. $b^{-1}>1>a^{-2}$

II. $h_{(x)}=\log_a x+\operatorname{colog}_b x$ es creciente.

III. La función $P_{(x)}=(ab)^x$ es decreciente.

A) VVV B) VVF C) FFF
D) VFF E) FVV

6. Determine la función h si se sabe que
$h^*_{(x)}=4^x-2^{x+1};\ x<0$

A) $h_{(x)}=\log_2\left(1+\sqrt{x+1}\right);\ -1<x<0$

B) $h_{(x)}=\log_2\left(1-\sqrt{x+1}\right);\ x<-1$

C) $h_{(x)}=\log_2\left(1+\sqrt{x+1}\right);\ x<-1$

D) $h_{(x)}=\log_2\left(1-\sqrt{x+1}\right);\ -1<x<0$

E) $h_{(x)}=\log_2\left(1-\sqrt{x-1}\right);\ x>1$

7. Sean f y g funciones inyectivas, tales que $f^*_{(x)}=3x+5;\ g_{(x)}=\dfrac{x}{4}+1$. Si $\left(g^*\ \text{o}\ f\right)_{(a)}=4$ determine $(f^*\ \text{o}\ g)_{(a-3)}$.

A) 14 B) 13 C) 12
D) 11 E) 15

8. Dada la función $f_{(x)}=-\sqrt{x^2+6x-7};\ x\in\langle-\infty;-7]$; halle la función inversa de f si es que existe.

A) $f^*_{(x)}=2+\sqrt{x^2-1};\ x\geq 1$

B) $f^*_{(x)}=-3-\sqrt{16+x^2};\ x\leq 0$

C) $f^*_{(x)}=\sqrt{x^2-13x+1};\ x\geq 1$

D) $f^*_{(x)}=2+\sqrt{(x-3)^2+1};\ x\geq 0$

E) $f^*_{(x)}=-3+\sqrt{16+x^2};\ x\leq 0$

9. Determine la inversa de la función
$f_{(x)}=\dfrac{3^x-1}{3^x+2};\ x\in\mathbb{R}$

A) $f^*_{(x)}=\log_3\left(\dfrac{1-x}{1+2x}\right);\ x\in\left\langle-\dfrac{1}{2};1\right\rangle$

B) $f^*_{(x)}=\log_3\left(\dfrac{1+2x}{1-x}\right);\ x\in\left\langle-\dfrac{1}{2};1\right\rangle$

C) $f^*_{(x)}=\log_3\left(\dfrac{2x-1}{1-x}\right);\ x\in\left\langle\dfrac{1}{2};1\right\rangle$

D) $f^*_{(x)}=\log_3\left(\dfrac{1+x}{1-x}\right);\ x\in\langle-1;1\rangle$

E) $f^*_{(x)}=\log_3\left(\dfrac{1-x}{2x-1}\right);\ x\in\left\langle\dfrac{1}{2};1\right\rangle$

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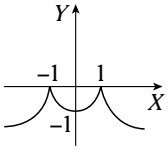
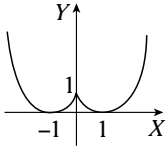
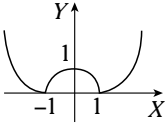
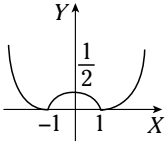
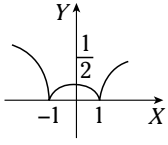
10. Determine la gráfica de la función
$f_{(x)} = \left|2^{|x|-1} - 1\right|;\ x \in \mathbb{R}$

A) 

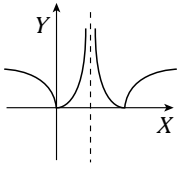
B) 

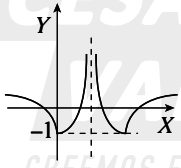
C) 

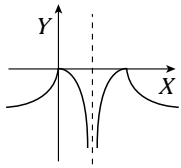
D) 

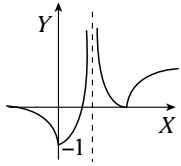
E) 

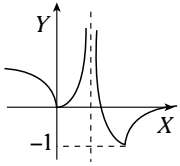
11. Determine la gráfica de la función
$f_{(x)} = \left|\log_3 |x-1|\right| - 1$

A) 

B) 

C) 

D) 

E) 

12. Respecto a la siguiente inecuación, determine el valor de verdad (V) o falsedad (F) de las siguiente proposiciones.

$\log_{[\![x]\!]}[\![x]\!] \geq \dfrac{\sqrt{3}}{[\![e]\!]}$

I. Su conjunto solución es un intervalo acotado.
II. El supremo del conjunto solución es 2.
III. 221/2 es una solución de la inecuación.

A) VVV
B) FVV
C) FFF
D) FFV
E) VFF

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